



World Ecology Report

TABLE OF CONTENTS

- 1 SPECIAL FOCUS:**
The Health and Environmental Implications of Nanotechnology
- 4 HEALTH AND ENVIRONMENT:**
Climate Change Mitigation: How Latin America Can Move Forward From COP 15
- 6 Biomagnification:**
Risk for Health
- 7 DID YOU KNOW**
- 8 FOOD FOR THOUGHT:**
Today, over 22,000 children died around the world
- 9 GOOD NEWS**
The Circus That Keeps Hope Alive
- 10 VOICES**
- 10 MORE GOOD NEWS**
- 12 CHORNOBYL UPDATE:**
Statement by H.E. Mr. Yuriy Sergeyev Permanent Representative of Ukraine to the UN
- 13 K. Kivshevych**
Foundation
- 16 POINT OF VIEW:**
The Aliens Are Coming

SPECIAL FOCUS:

The Health and Environmental Implications of Nanotechnology



Bioremediation of an oil spill in Alaska using traditional (non-nanotechnology) based techniques

Source: www.alaska-in-pictures.com

Nanotechnology is the construction of objects – anything from medical devices to computer components – at an extremely small scale. Specifically, nanotechnology refers to the nanometer scale. One nanometer is one billionth of a meter. To put this in perspective, the comparative size of a nanometer to a meter would be that of a marble to the earth.

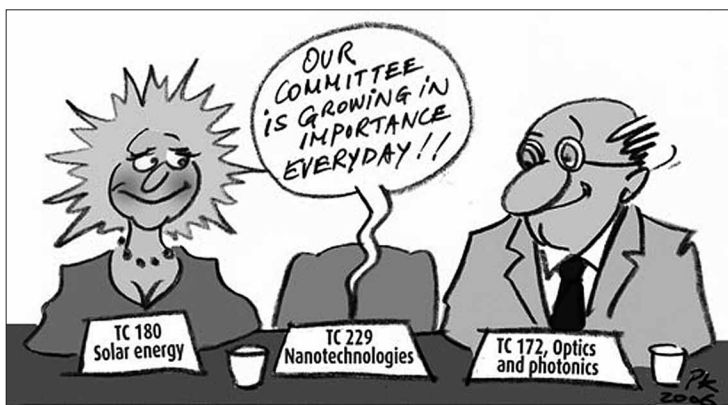
The concept of nanotechnology has been around for over half a century. It was first explicated by physicist Richard Feynman in his, now famous, talk *There's Plenty of Room at the Bottom*, given at the American Physical Society meeting at Caltech on December 29th, 1959. Since Feynman's presentation, there has been a veritable explosion of nanotechnologies. Currently, over 800 different types of passive nanoparticles are present in commonly consumed goods. For example nano-scale particles of titanium dioxide are the active ingredient in sunscreen and nano-sized silver particles are embedded in food packaging and sports clothing and serve as a natural disinfectant and deodorizer.

Currently, however, there is a focus on constructing active nano-scale devices. Active nano-scale devices are constructed in one of two ways. The "bottom-up" approach relies on molecular recognition, whereby the molecular components assemble themselves through a chemically controlled process. Alternatively, the "top-down" approach

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Choices bring power.**



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relies on the construction of nano-objects by disaggregating them from a larger entity. As active nanotechnology becomes more and more common, opportunities to use nanotechnology in medical applications and environmental mitigation activities become more and more promising. However, with these innovations come significant risks, some of which we do not fully comprehend. Consequently, one must ask, do the risks outweigh the potential benefits?

Nanotechnology and Environmental Mitigation:

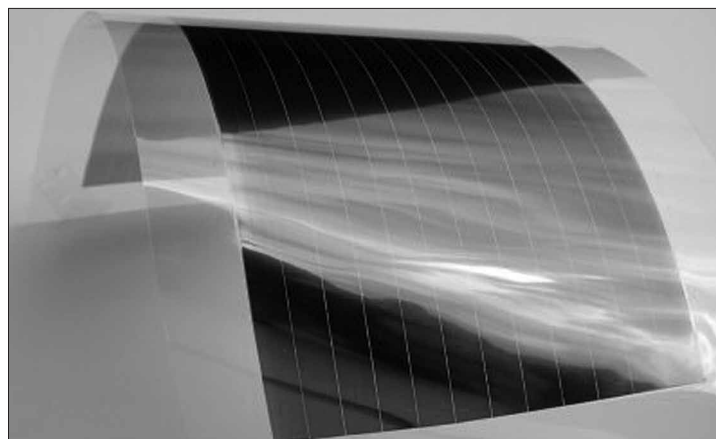
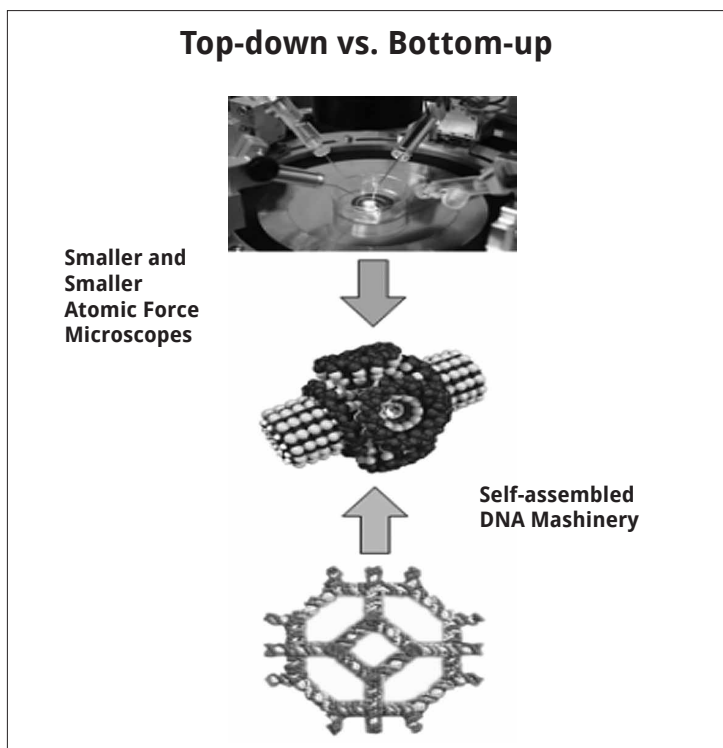
With regard to greenhouse gas emissions from fossil fuel use, nanotechnology could be utilized to both decrease reliance on fossil fuels and mitigate the effects of greenhouse gases already emitted. As we all know, our planet faces a diverse array of serious environmental problems. Some of the most salient are greenhouse gas emissions from fossil fuel use, chemical pollutants of all

kinds and massive amounts of inorganic waste which is disposed of each year. Nanotechnology offers a number of promising potential solutions to each of these problems.

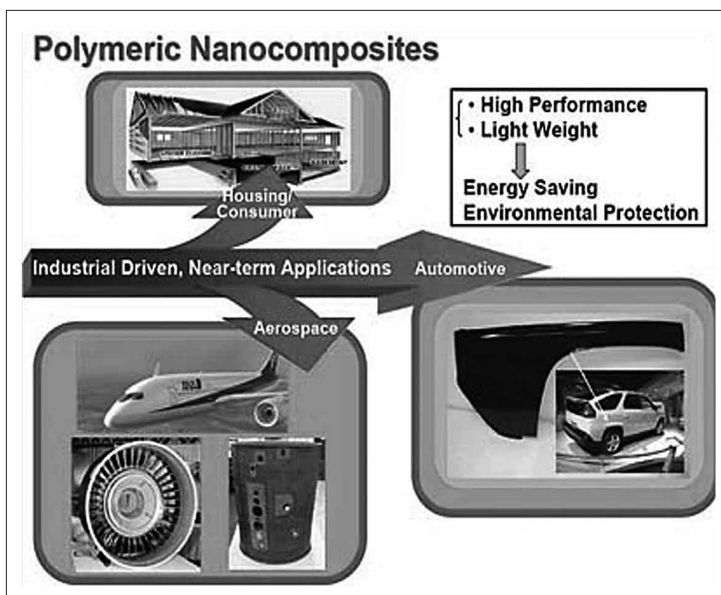
With regard to greenhouse gas emissions from fossil fuel use, nanotechnology could be utilized to both decrease reliance on fossil fuels and mitigate the effects of greenhouse gases already emitted. Toward the former goal, nanotechnology could be used to reduce costs while simultaneously increasing efficiency of renewable energy technologies. Currently, researchers are working on nanomaterial based solar cells which could be produced more economically, would be more efficient and will also be extremely lightweight and flexible. As regards mitigation of existing greenhouse gases, biomimicry would allow scientists to replicate the process of photosynthesis which naturally converts carbon dioxide into oxygen. Currently, this is possible but at costs of approximately US\$30,000.00 to replicate the equivalent of a single, to small trees photosynthesis capacity. Nanotechnology could replace current catalysts thereby significantly reducing costs.

There is a significant amount of promising research which indicates that nanotechnology could be employed to effectively deal with environmental pollutants. Nanofilters could be utilized to capture noxious components of factor and power generation emissions. Additionally, the use of nano-particle could greatly improve the efficiency of bio-remediation processes – often used to clean up after chemical spills or to remove toxins which have been absorbed into the ground or leached into water supplies.

Finally, nanoparticles can be used to create alternative products which do not result in the formation of toxic byproducts or effluents and which require much less power to create. The auto industry is experimenting with the use of stronger nano-composites, which could replace metallic components formed through energy intensive processes. It is estimated that the tran-



A lightweight and flexible nano-material based solar panel



sition to nano-composites in the auto industry would save approximately 1.5 billion liters of fuel and reduce greenhouse gas emissions from production by over 5 billion kilograms per annum. Additionally, nanoparticles of inorganic clay and polymers could be used to replace carbon black tires. This would not only be more environmentally friendly but also more wear resistant.

Nanotechnology and Medicine:

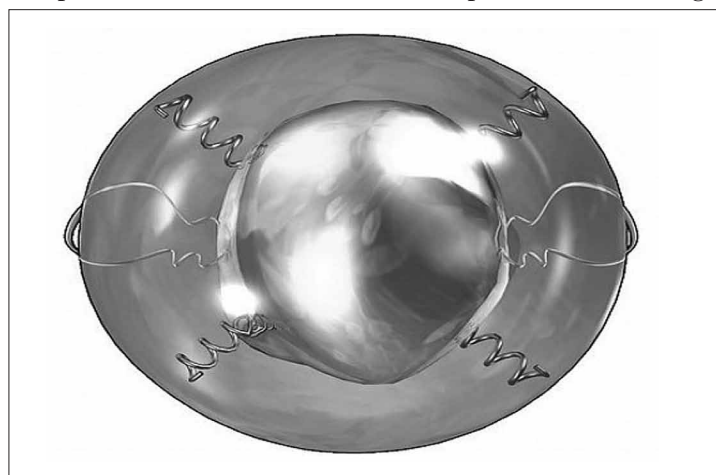
It is evident that there is a diverse array of applications for nanotechnology in environmental mitigation, however there is an even larger scope for the use of nanotechnology in medicine. It is envisioned that nanotechnology could play a role in myriad medical applications ranging from drug delivery to diagnostic and imaging technics and from anti-microbial applications to cell repair.

One especially promising new nanotechnology is CytImmune Science's targeted chemotherapy drug. The drug, which has already completed Phase I Clinical Trials, relies on nanoparticles to deliver chemotherapy drugs directly to cancer cells, thereby minimizing healthy cell death. A similar process could be used to encapsulate medicines, which have typically been administered by IV. The encapsulated drugs could be delivered orally and enter the bloodstream through the stomach. A third technology relies on buckyballs to trap free radicals generated during allergic reaction thereby blocking the effects of the reaction. In another proposal, nano-desiccants such as aluminosilicate could more effectively cause clotting in trauma patients, thus replacing Quick Clot, a traditional desiccant and clotting agent used by the U.S. Military for combat medicine. Finally, ingestible iron oxide particles, known as quantum dots (or qdots) could greatly improve MRI imaging of tumors when they are coated with peptides that bond to the tumor.

Health and Environmental Risks of Nanotechnology:

It is undeniable that there are a multitude of health and environmental benefits to nanotechnology. However, we also do not fully understand the risks associated with these technologies. Clearly, introducing nanoparticles into the natural environment and into our bodies will have significant effects and doing so on a large scale without fully comprehending the associated risks would be negligent.

Already, there is evidence that employees in the nanotechnology research and production fields may be exposed to increased health risks through inhalation, dermal contact or ingestion. Currently available research suggests that some nanoparticles are biologically active, can penetrate human skin and can produce toxicologi-



An illustration of CytImmune Science's target chemotherapy drug enveloping a cancer cell

cal reactions in lung tissue. However, it is difficult to accurately predict the effects which vary based on the "particle size and size distribution, agglomeration state, shape, crystal structure, chemical composition, surface area, surface chemistry, surface charge, and porosity" of the nanoparticles. Moreover, nanoparticles may affect the body differently than non-nanoparticles of a similar composition.

In all likelihood, the benefits far out way the risks, perhaps by a factor of a billion to one. Nevertheless, it is crucial that future research be undertaken to investigate these risks to ensure that nanotechnology, especially active nanotechnology, be utilized in a safe manner.

Written by Barnett Koven

Sources: google.com/search?q=nanotechnology+%2B+health+and+the+environment&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a; iscanmyfood.com/hd/index.php?t=Artificial+photosynthesis; understandingnano.com/medicine.html; euractiv.com/en/science/nanotech-risks-health-environment-need-assessment/article-146386; osha.gov/dsg/nanotechnology/nanotech_healtheffects.html; azonano.com/details.asp?ArticleID=1058; www.nanotechnologydevelopment.com/energy/application-of-nanotechnology-in-environment-and-energy.html

Health and Environment:

CLIMATE CHANGE MITIGATION: HOW LATIN AMERICA CAN MOVE FORWARD FROM COP 15

While it is evident that responsibility for climate change lies primarily with the wealthiest nations, this reality does not exempt developing and rapidly industrializing countries from taking concerted action to reduce carbon dioxide emissions in order to mitigate climate change. The ill effects of climate change are a public bad and will be experienced by all nations, irrespective of each nation's individual carbon footprint. Therefore it is necessary that Latin American countries do more to reduce carbon dioxide emissions. Unfortunately, in the absence of an effectual, legally binding treaty, other mechanisms will be necessary to ensure progress on reducing carbon dioxide emissions. As a result, it is likely that economic (and other) incentives will prove to be the best driver of climate change mitigation.

The Copenhagen Accord and Latin America's Response:

Lamentably, the COP15 to the UNFCCC failed to produce an agreement of any real value. At best, it is a stopgap measure until COP16 in Mexico next year and Rio+20 (a follow up to the Rio Earth Summit of 1992; to be held on the 20th anniversary of the original meeting) in Brazil in 2012. The agreement that came out of December's meeting in Copenhagen is seriously flawed, just as were the way negotiations were conducted.

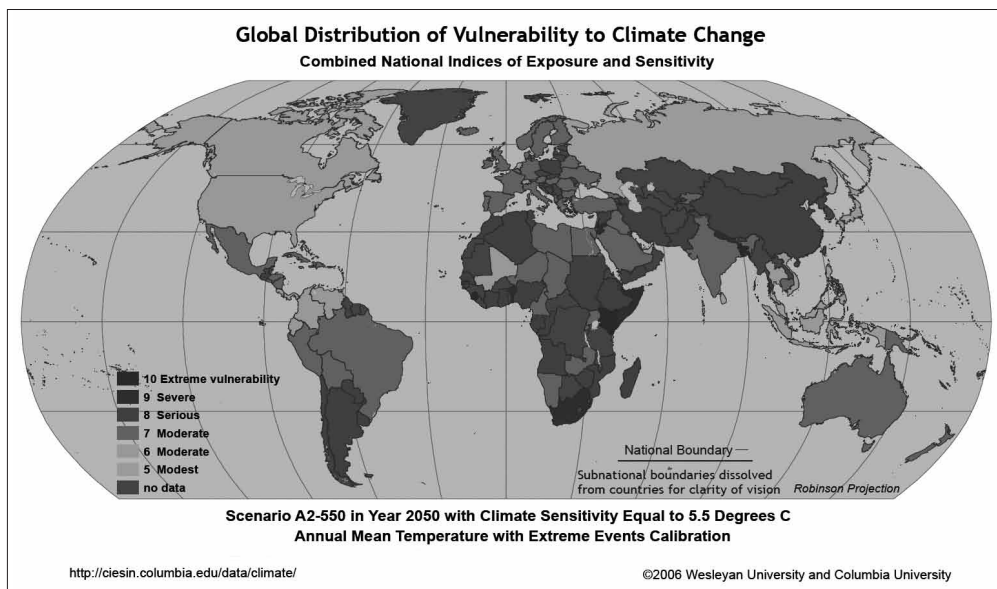
The Copenhagen accord most grievous shortcoming is the lack of any specific targets for carbon dioxide mitigation. This is a result of China's insistence that all figures be removed so as to ensure that China was not locked into

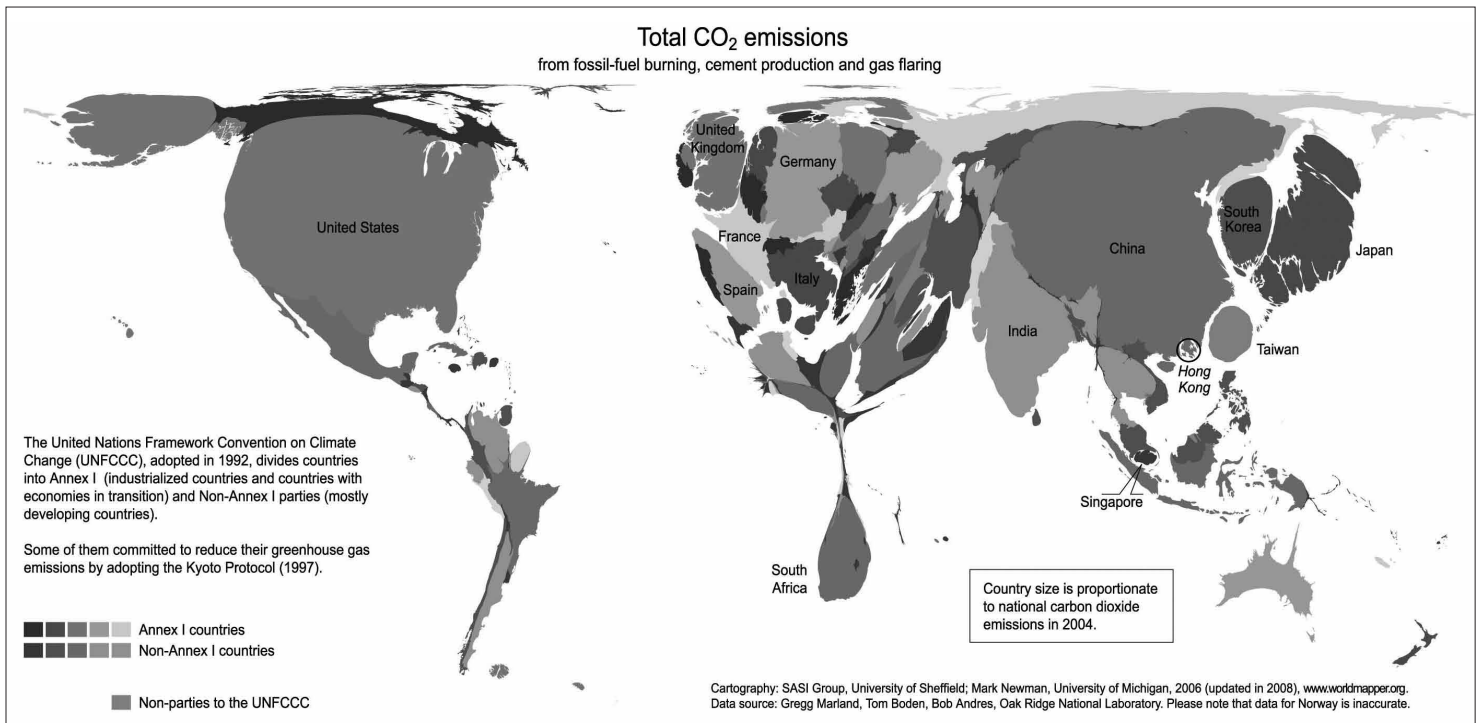
any commitments to reduce emissions. Also, at China's insistence, any reference to the accord being a precursor to a legally binding treaty was stripped from the text. China's intransigence substantially undermined world recognition that developed countries must reduce emissions by 80% below 1990 levels by 2050. This target, while scientifically unambiguous had been politically contentious prior to this episode. For example, in advance of COP15 to the UNFCCC, the United States appeared to pledge to reduce carbon dioxide emissions by 20% by 2020. However, the U.S. pledge used 2009 as a base year. With respect to 1990 levels of emissions, the U.S. was agreeing to curb emissions by only 3% over the next decade. By ignoring and manipulating scientific emissions targets, the U.S. substantially undermined the final agreement.

Perhaps, even more consequential was the way in which the negotiations were carried out. Much of the negotiations were carried out behind closed doors amongst small groups of countries and not in the official plenary sessions as designed. This in turn led to a multitude of problems and allowed the developed world and China to act as spoilers. On only the third day of negotiations, a draft text prepared by the developed countries clique was leaked to all member states. This quickly led to negotiators representing the Group of 77 plus China to walk out of the negotiations (they quickly returned). While it is known that China orchestrated the walkout, it is speculated that China was also responsible for leaking the draft text.

Amidst fears by developing countries, including Cuba, Venezuela, Bolivia and Nicaragua (all members of the Bolivarian Alternative for the Americas (ALBA)),

the final text of the accord was negotiated in private by the United States along with Brazil, China, India and South Africa. Understandably, this led to considerably backlash, whereby the aforementioned ALBA countries indicated that they would not ratify the accord in light of the fact that "it had not been drafted by any official procedure, [and] the deal [had been] struck... by handpicked leaders [excluding most of the world]..." Despite this response by a number of Latin American countries, the flawed agreement was ratified. However, its usefulness is a question able at





best as a result of the flawed negotiations and the crucial omissions from the final document.

How Latin America Can Move Forward:

In the absence of a legally binding treaty, alternative incentives to mitigate climate change need to exist if Latin American countries are going to work towards tackling climate change. While it is evident that economic incentives are certainly the most powerful motives, other motives are also relevant. Economic (and other) incentives have already led to a small number of successful mitigation programs in Latin America, but more needs to be done.

Latin America's most significant contribution to climate change mitigation is Brazil's sugarcane based etha-

nol industry. Brazil's ethanol industry was formed in 1975 as a result of concerns by Brazil's military government about the security of Brazil's access to energy (at this time 90% of Brazilian oil came from foreign suppliers). With the return to democracy, the ethanol industry continued to expand. Expansion was led by sugarcane producers with purely economic motives. As a result, nearly all of the new cars manufactured in Brazil from the early 1980's through to the present can run on 100% ethanol. As such, carbon dioxide emissions from transportation in Brazil are significantly lower on a per vehicle basis than much of the rest of the world. Thus, it is evident that economic (as well as energy security) considerations can provide an impetus for reducing carbon dioxide emissions.

In addition to its sugarcane based ethanol program, Brazil was at the forefront of the COP15 to the UNFCCC. The Brazilian negotiators had the largest delegation at the conference, with approximately 800 members. Additionally, Brazil was a part of the core group that drafted the final version of the accord. Brazil also provided financial resources to a fund established by developed countries to assist developing countries to mitigate climate change. Perhaps Brazil's substantial, high-level engagement at the conference is a reflection of the country's firm commitment to combating climate change. More likely, it is designed to aid Brazil in "gain[ing]" a diplomatic stature befitting the direction in which its economy is heading." If this is the case, it illustrates that geopolitical considerations can also serve as a driver for climate change mitigation.

Colombia has spearheaded a novel program aimed at eradicating coca plants in an ecologically sustainable man-



A Colombian man pulls up dead plants from his mountainside field. This area was sprayed in an effort to eradicate suspected coca and poppy plants.

Source: <http://www.msf.org>, Kadir van Lohuizen/Agency VU

ner. The Colombian Forest Ranger Families Program is a conditional cash transfer program, which provides peasant farmers of coca a financial incentive to manually eradicate coca plants and replace them with native plant life that has the benefit of sequestering carbon dioxide. In addition to subsidizing the transition from coca to sustainable agriculture, the program provides technical resources to help ensure the efficacy of the program's environmental benefits. This program illustrates that combating narcotics can also be an incentive to mitigate climate change.

These three examples illustrate that economic, energy security, geopolitical and even narcotics related concerns have led to successful mitigation efforts, even in the absence of a legally binding treaty. Nevertheless, there is a lot more for Latin America to do.

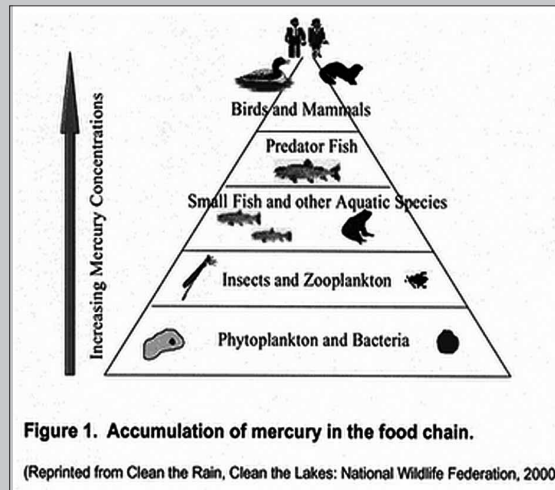
Conclusion:

The fact that the wealthiest nations are the most culpable for climate change cannot be used as an excuse for inaction on carbon dioxide reduction and climate change mitigation in Latin American and other developing and rapidly industrializing countries. The negative effects of climate change will harm all nations, and it is therefore necessary that every country makes a substantive effort to reduce emissions. While the COP15 to the UNFCCC failed to produce a legally binding treaty that would ensure across the board reductions in emissions, Latin American countries have done a lot to reduce emissions domestically as a result of alternative incentives. Nevertheless, there is a lot more which Latin American countries could and should be doing.

Biomagnification: Risk for Health

Humans, as well as other organisms, are at risk of health issues associated with a biological phenomenon called biomagnification. Biomagnification is the increase in concentration of a substance, such as a pesticide or heavy metal, as it is passed up the food chain. Introducing a negligible amount of a toxin into an ecosystem may seem harmless at first; however, it is the accumulation of the toxin in the organisms over time as a predator consumes prey that is dangerous. Eventually, this buildup of toxins will have reached a dangerously high concentration and prove to be detrimental to the health of larger predators—including humans.

These bioaccumulants, or substances that accumulate in the tissues of organisms, are not easily metabolized because of the composition of these pollutants. Lipophilic, or fat-soluble substances, cannot be broken down and excreted in urine. Therefore, if an organism lacks the enzymes required to break down the bioaccumulant, it will collect in the fat tissues of the organism. When the organism is consumed by another organism, the bioaccumulants are passed on as well. Biomagnification occurs because of the mechanics of the trophic system. Due to the decrease in energy that accompanies each increase in trophic level, predators must consume more prey in order to obtain the proper amount of energy for survival. As a consequence of consuming more prey, predators also



consume high levels of bioaccumulant.

The effects of biomagnification can clearly be seen with the issue of mercury-pollution in seawater. The amount of mercury in the water seems insignificant and is unable to harm larger organisms at first, but the mercury is quickly absorbed by certain algae, usually as methylmercury. The mercury accumulates within the individual alga due to another biological process, bioaccumulation, and the increased

level of mercury is passed on to the next trophic level when predators consume the algae in large proportions. As a result, the predator acquires an increased mercury-intake. The predator is then consumed by a predator of an even higher trophic level, and mercury is once again passed down the food chain. This process continues until the level of mercury reaches a destructive high, and the deadly effects of biomagnification can be witnessed.

Sources: Croteau, M., S. N. Luoma, and A. R Stewart. 2005. Trophic transfer of metals along freshwater food webs: Evidence of cadmium biomagnification in nature. *Limnol. Oceanogr.* 50 (5): 1511-1519.; EPA (U.S. Environmental Protection Agency). 1997. *Mercury Study Report to Congress. Vol. IV: An Assessment of Exposure to Mercury in the United States*. EPA-452/R-97-006. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards and Office of Research and Development.; Landrum, PF and SW Fisher, 1999. Influence of lipids on the bioaccumulation and trophic transfer of organic contaminants in aquatic organisms. Chapter 9 in MT Arts and BC Wainman. *Lipids in fresh water ecosystems*. Springer Verlag, New York.



DID YOU KNOW?

CT Screening Better Than Chest X-Ray for Reducing Lung Cancer Mortality

Studies have shown that annual low-dose computed tomography is better able to detect lung cancer than chest radiography in high-risk patients, according to early, as-yet unpublished findings from the National Lung Screening Trial released by the National Cancer Institute.

Dr. Christine Berg, from the National Cancer Institute said: "This is the first time that we have seen clear evidence of a significant reduction in lung cancer mortality with a screening test in a randomized controlled trial. The fact that low-dose helical CT provides a decided benefit is a result that will have implications for the screening and management of lung cancer for many years to come."

Source: National Cancer Institute news release <http://click.jwatch.org/cts/click?q=227%3B67463980%3BkdJlg%2Fz54SONY2izLFpY0McBm614wFMZWAbAwR%2B48GI%3D>; Radiology article describing the trial's design <http://click.jwatch.org/cts/click?q=227%3B67463980%3BkdJlg%2Fz54SONY2izLFpY0GCGgUw378HwAbAwR%2B48GI%3D>

Why cell phone talkers are annoys-makers

A study at Cornell University found that cell phone users cause a great deal

of irritation because their background chatter distracts individuals nearby. The study found that drivers operate vehicles poorly not only while talking on cell phones but also when passengers converse on their cell phones. These effects are often beyond an individual's conscious control. On the other hand, the study found that overhearing a whole conversation does not divert listeners' attention.

Source: *Psychological Science* 3/24/10. p. 16



Criminalization of sex work in Asia threatens HIV prevention efforts

According to UNAIDS, the AIDS epidemic in Asia is primarily linked to unprotected paid sex. Policies outlawing sex work have undermined HIV/AIDS prevention efforts by stigmatizing and fragmenting sex workers and turning condom possession into an illicit activity that could lead to incarceration. According to a July 2010 Human Rights Watch report, officials are now interpreting anti-sex work laws to implicate that even those who distribute condoms are reasonable suspects for illegal activity. The legislation has driven sex

workers into hiding and made containing HIV a challenge. Sex workers are up against more than just policy, but dangerous stigma and violence that threaten human rights and HIV prevention. Countries such as Cambodia and Papua New Guinea specifically criminalize HIV transmission or exposure, making it nearly impossible for those in need to access HIV services.

Source: IRIN Asia

Alcoholism and PTSD

Alcohol use disorders (AUDs) have long been associated with both trauma history and post-traumatic stress disorder (PTSD). Several experts have suggested that increased alcohol use after trauma is a form of self-medication. To eliminate bias resulting from the selection of subjects whose preexisting characteristics predispose them to both trauma exposure and alcohol use, researchers examined data on 10 disasters, where risk of exposure was random and unrelated to subjective characteristics. The investigators were not able to determine the prevalence of preexisting diagnoses immediately before the disasters, but the careful clinical diagnostic assessments do suggest that most post-disaster alcohol problems are preexisting, although they might be reactivated or exacerbated by the trauma. The findings suggests that individuals with preexisting AUD problems who may be in recovery or those who drink to cope with post-traumatic distress should be targeted for clinical interventions because of their vulnerability to both PTSD and post-disaster AUD.

Source: North, CS et. al. *Postdisaster course of alcohol use disorders in systematically studied survivors of 10 disasters.* *Arch Gen Psychiatry*: Oct. 4, 2010

World Information Transfer

Food For Thought:

TODAY, OVER 22,000 CHILDREN DIED AROUND THE WORLD

Approximately 22,000 children die every day around the world: one every four seconds, fifteen every minute, 8.1 million every year. What lies behind this alarming epidemic of child mortality? Certainly genocide, rape, and other forms of violence play a role in child mortality; however, the majority of these children die from poverty, hunger, easily preventable diseases, poor environmental conditions, and unsanitary births. Women who lack access to basic protections, such as birth control, due to political and religious policies and restrictions cannot cope with many children, thus causing a staggering increase in unplanned births, and in turn, child deaths. This continuing catastrophe goes virtually unnoticed, largely because only .1% of these deaths occur in the industrialized world.

Media analysts frequently debate the reasons for the public's general lack of interest in this epidemic. Some argue that people are more responsive to instant disasters, such as earthquakes, terrorist attacks, or tsunamis. While the number of casualties in these short-lived cataclysms are well worth the attention, they pale in comparison to deaths caused by the uninhabitable conditions of many regions in developing nations. All too often, reporters and viewers turn a blind eye. Occasionally, prominent celebrities heighten public awareness of child mortality through publicity. Although the media are too often silent about child mortality, they are not the true source of the problem. In the countries where child mortality is most appalling, the poor, particularly women, simply do not have the resources available to create sustainable and healthy environments. The problem has been exacerbated by the recent financial crisis. Worldwide trade and the international movement of staggering amounts of capital have done little to reach the urban and rural poor.

Yet there is a flicker of promise on the horizon. In 2009, Muhammad Yunus, the "banker of the poor," received the Nobel Peace Prize for giving micro-loans to poor people in developing nations. The poor largely exist outside of the commercial banking system in most countries. The problem here is not the virtues or vices of capitalist or socialist economic theory; it is simply that the poor have no access to funds because they have no collateral to secure loans. However, reflecting his faith in the poor, Yunus's micro-credit project requires no collateral and has helped tens of thousands. His institution, Grameen Bank, extended micro-loans averaging two hundred dollars, largely to women. Although Yunus's project has totaled nearly six billion dollars since its founding, the micro-loan idea is still underfunded.

If the world's governments could provide vastly more funding for micro-loan projects under the aus-

pices of international agencies, e.g., UNICEF, the World Bank, and the International Monetary Fund, side-by-side with bankers and financiers like Yunus, we could see a remarkable drop in child mortality. The women who would qualify for micro-loans to jumpstart small businesses are the same women whose children are dying because of inadequate food, shelter, and medical care. Such a concerted effort of the public and private sectors working hand-in-hand could break the cycle of poverty from which previously there has been no escape.

In many developing nations, children that manage to clear the clutches of an early death are met instead with the evil practice of child slavery. In Haiti alone, more than 300,000 children have entered lives of oppression, usually with the support of their families. Poverty in these underprivileged nations is so strong that millions of families face the hardships of watching their children turn into a stranger's property, in return for life's basic necessities." AS: "Extreme poverty encourages the sale of children into slavery in order to purchase basic necessities.

These unfortunate children are subject to the most miserable of tasks, including slaughtering animals, carrying heavy objects over long distances, and prostitution. Long hours require child slaves to sacrifice their educations. Many are forced to sleep on dirty sheets of cardboard, eat scraps of tossed food, and wear the poorest of rags. Boys are frequently whipped with dried cowhides, while girls, who constitute more than 70% of child slaves, are subject to rape and forced prostitution by their owners. The slaves' masters are usually prominent nationalist figures within their respective governments or closely allied with Western corporations. Companies such as Nike, Wal-Mart, and even Hershey's Chocolate have been accused of abetting child labor in developing nations, and their practices are virtually invisible to the public's eye.

Amongst these terrible practices, child slaves retain their hope, life, and dignity; many are being saved every day. In Le Caye, Haiti, the people of Hope Village are working day and night to help the children escape their lives of bondage for food, shelter, and education. Children enrolled in these programs are learning to plant crops, raise animals, build houses, carve wood, sew, and much more. Safe havens like Hope Village exist all over the world, and miracles are constantly occurring. Reducing child slavery requires billions of dollars to be successful, and it is up to organizations like the United Nations to accomplish these tangible goals.

Source: Shah, Anup. "Today, over 22,000 children died around the world." *Global Issues*, Updated: 20 Sep 2010. Accessed: 08 Oct 2010. globalissues.org/article/715/today-over-22000-children-died-around-the-world; freethekids.org/child-slavery/



GOOD NEWS

The Circus That Keeps Hope Alive

Tucked into the northern corner of Baffin Island's Foxe Basin Bay in Nunavut, near the entrance to the Northwest Passage, lies a small island named Igloolik. Its residents, the Iglulingmiut, make every effort to hold onto their traditional lifestyles, which in a rapidly changing world poses many challenges. Despite its remoteness, however, Igloolik is an active and popular place. It is the location of the Igloolik Research Centre, a facility known for its environmental monitoring programs and studies of traditional Inuit technology and knowledge.

Igloolik is also home to a bona fide "Hollywood North," Isuma Productions – Canada's first Inuit-owned independent production company,

which produced a number of award-winning feature films and documentaries, among them *Atanarjuat* ("The Fast Runner").

One of the more unexpected and intriguing recent developments in Igloolik is its now famous circus, Artcirq. Unlike most circuses that are established solely to provide entertainment for their audiences, Artcirq's inspiration has very serious roots. In the Arctic, the impacts of a changing environment and shifting lifestyles commonly induce in many inhabitants a lack of purpose and a pervasive sense of hopelessness and loss. Not possessing the tools and skills with which to remedy these conditions, many Igloolik teenagers suffer from severe depression. The consequences are all too often tragic. Government statistics from the late 1990s show that between four and six young adults committed suicide in Igloolik every year, a rate seven times higher than in Montreal. In the summer of 1998, two young men took their lives, once again shattering this small island community of 1500 residents, and leaving the inhabitants wondering what they could do to stop the miserable trend.

Following this tragedy, it became clear that concrete actions had to be taken to provide children and teenagers with a vehicle for creative self-expression and communication. Initiated by Isuma Productions, a group was formed with a mission of suicide prevention, using theatre arts as its medium. It was



Igloolik children in performance standby, 2006. Photo: Antoine; courtesy of Artcirq Production

named Inuusi, which means "life" in Inuktitut.

Inspired by Clowns Without Borders, an organization that sends clowns to third world countries and war zones to work with children, Guillaume Ittuksarjuat Saladin, who had spent the first 15 summers of his life on the island, proposed that the budding youth theatre group combine the teaching of circus skills with cultural activism.

Invited by Inuusi, performers from the National Circus School of Montreal were invited to do workshops with the community. With little more than an accordion, juggling objects, a unicycle, and colorful costumes, the performers fascinated their young audience, who enthusiastically enjoyed their first experience with the bold and comic spirit of the circus. As part of this program, an expedition across Baffin Island was arranged, the purpose of which was to present Artcirq and share its message with local youth in other communities.

Begun as a noble yet simple project in innovative social occupational therapy, the Inuusi youth drama group evolved into a community-based multimedia company, now known as the Artcirq Inuit Performance Collective. Le Cirque du Soleil sponsors the purchase of Artcirq's circus accessories. With Saladin as its Artistic Director, Artcirq now boasts

Continuing on page 10



Artcirq perform the "Trampoline" at Igloolik Point, 2005. Photo: Antoine; courtesy of Artcirq Productions



VOICES

Commemorating Holodomor

The Ukrainian Mission to the UN, will be hosting an event at UNHQ in New York on the 3rd of December from 3-5PM. The event will examine Holodomor, a forced famine perpetrated by the Stalin's regime in Ukraine in 1932-1933. Examination of Holodomor will help explicate the myriad political implications of food security and provide a forward looking approach as it relates to UN-MDG #1, The Eradication of Hunger and Extreme Poverty.

Conference:

WAMUNC (Washington Area Model United Nations Conference) XIII

Dates: Thursday, March 24th through Sunday, March 27th 2011; **Location:** The George Washington University, Washington, D.C.

The Washington Area Model United Nations Conference or WAMUNC, is an annual conference organized for high school students from around the world on the workings of the United Nations System and more generally, international diplomacy. Student delegates strive to research, analyze, and debate diverse global issues. Assisted by the conference staff, student delegates are encouraged to negotiate and find common grounds that lead teams to effective solutions in the finest spirit of diplomacy. In addition to educating students, WAMUNC inculcates civic action amongst the next generation of leaders. WAMUNC XIII will also offer an opportunity for the student delegates to learn about the important contributions of NGO's. Please visit: gwias.com/WAMUNC

Simon's Internship: Summer 2010

I was selected by the World Information Transfer (WIT) to intern in the organization during the summer of 2010. I was part of a team of 12 interns. My major responsibilities as an Intern during the Summer 2010 included; representing WIT at different UN meetings, seminars and briefings in the United Nations Headquarters in New York; producing summary brief of meetings,

networking and distributing WIT's World Ecology Report; translating WIT's World Ecology Report Conference Issue to Mandarin; drafting and researching different topics on WIT's Rio+20 project.

The internship broadened my horizon and insights about the United Nations. If I am asked to share my experience and feelings about the internship, there's one insight that I believe is of paramount importance and has changed my perception towards the United Nations. As a political science major, I have always heard that many accused the UN of being full of bureaucracy, and because of its corrupted nature, may never achieve its desired goals and targets. From my point of view, this is a misconception. My 70 days of experience revealed to me that the UN is indeed primarily a platform for member states to communicate and collaboratively address the many maladies in the world. Understanding each other is vital to alleviate problems that are threatening and jeopardizing the survival of human beings, and this would be the undeniable value of the existence of the United Nations.

Source: Wong Chi Chung Simon, Chinese University of Hong Kong Global Internship Programme 2010 – Learning Journal 31st May, 2010 to 29th July, 2010

More Good News

Continuing from page 9

more than 30 members, all of whom are deeply involved in the cultural life of Igloodik. The group's achievements have led to the creation of its own Artcirq Channel and to Isuma.



ARTCIRQ promotional poster.
Courtesy of Artcirq Productions

tv, which is now accessible to everyone on the Internet. The addition of video-making to Artcirq's projects allows the Inuit to overcome their geographical isolation, thereby establishing a coherent bond between their ancestral ways and the realities of a contemporary world.

As word of Artcirq's successes spreads, the troupe not only travels across the globe with its performances, workshops and mission, including COP-15 in Copenhagen and the 2010 Olympic Winter Games in Vancouver, but it also serves a very important function – to motivate other communities facing similar challenges to establish their own self-esteem enhancing initiatives. Most importantly, Artcirq remains

a project for youth, by youth. An abandoned swimming pool drained of its water, old mattresses salvaged from the dump, juggling pins, and a circus trainer may be odd ingredients with which to fashion a suicide prevention program, but that is all that was needed to turn Igloodik's despair and powerlessness into hope and a sense of belonging. In a land where ancient ways and the modern world clash, Artcirq has managed to transform disillusioned teens and young adults into engaged community members who carry their pride of heritage far beyond their little island's boundaries... and all without a single elephant.

Written by Moki Kokoris

World Information Transfer

INES Celebrates 20 Years of Nuclear Communication

On October 14, 2010 the International Atomic Energy Agency (IAEA) and the OECD Nuclear Energy Agency (NEA) celebrated the 20th anniversary of the International Nuclear and Radiological Event Scale (INES). The INES was developed by the IAEA and the NEA in 1990 in response to the Chernobyl nuclear catastrophe. By providing a scale similar to those used to measure temperature, INES helps authorities rate the severity of nuclear and radiological events and communicate their safety implications to the public. The INES was originally used to classify nuclear events at power plants only, but has extended to any event associated with the transport, storage, and use of radioactive materials and sources. Now adopted in 69 countries, the INES has become a crucial nuclear communication tool that has helped to promote transparency and provide a better understanding of nuclear related events and activities.

Source: Nuclear Energy Agency
www.nea.fr/press/2010/2010-07.html

EU and UN agencies unite to reduce resource wars

According to UNEP research, 40 percent of intra-state conflicts worldwide are linked to the exploitation of natural resources. In October 2010, the European Union (EU) and six UN agencies initiated a new training program for national and local governments, as well as UN and EU field staff, to improve the management of natural resources in vulnerable countries. The UN and the EU expect the training program to help reduce recurring resource conflicts and build peace in post-conflict nations. In the next year, the first resource management training programs will be introduced in Timor, Liberia, Peru, and Guinea.

Source: UN Environment Program

UN and IOC working together to promote healthy lifestyles

The United Nations and the International Olympic Committee (IOC) are teaming up to promote physical activity and healthier lifestyle choices in an effort to help people fight off disease and live longer, healthier lives. In July 2010, the IOC and the World Health Organization (WHO) signed an agreement promising to work together with the international community to help reduce the risk of non-communicable diseases such as cardiovascular disease, cancers, and diabetes. Killing nearly 35 million people each year, non-communicable diseases are the leading causes of death around the world. The WHO estimates that nearly 90 percent of fatalities among those under the age of 60 in developing countries can be prevented by decreasing tobacco use, improving diets, and increasing physical activity. The IOC and the WHO have agreed to facilitate tobacco free Olympic Games and promote grassroots sports activities around the world to help fight childhood obesity.

Source: UN News Service, www.un.org/apps/news/printnewsAr.asp?nid=35378

Nepal installs 3G services at Mount Everest

In October 2010, a private telecom firm installed high speed internet services at the base camp of Mount Everest. The installation will bring faster and more affordable telecommunication services to the people living in the Khumbu Valley as well as to tens of thousands of climbers who visit the region every year. Telecommunication services cover only a third of Nepal's 28 million people. Over the next year, Teli-aSonera will spend over \$100 million to expand its facilities and ensure mobile coverage to more than 90 percent of the Himalayan nation's population.

Source: Reuters, www.reuters.com/assets/print?aid=USTRE69R2X420101028

Protected areas to receive \$6.8 million conservation boost from LifeWeb Partnership

On October 28, 2010, the government of Spain and the United Nations Environment Program (UNEP) announced a new partnership for protected areas under the LifeWeb initiative. The partnership will deliver \$6.8 million in benefits for biodiversity and for communities living in and around protected areas, mainly in low income and developing countries. Additionally, the partnership will support the establishment of new protected areas, which in turn, can generate income opportunities. The LifeWeb initiative was launched in May 2008 by the Convention on Biological Diversity. The goals of the LifeWeb initiative are to strengthen financing for protected areas, conserve biodiversity, secure livelihoods, and address climate change.

Source: UN Environment Program

Ebook Readers - A Positive Influence on Carbon Footprint

The increasing popularity of e-book readers such as the Kindle or Nook is likely to drastically reduce the carbon footprint of the publishing industry, one of the most polluting sectors of the world's economy. Books are ecologically expensive, requiring the harvesting of trees and transportation of lumber. Harsh chemicals are needed to produce ink, and these chemicals are released into the ecosystem when the books are discarded. A downward trend in the industry's ecological footprint is already visible thanks to the prevalence of online newspapers and blogs, but the reading of these texts still requires a computer for most. Thanks to the decreasing price of e-book readers, more consumers are able to replace their daily papers and novels with a single battery operated device.

Sources: *The environmental impact of Amazon's Kindle* – Cleantech Group; cleantech.com

Chornobyl Update:

Statement by Yuriy Sergeyev, Permanent Representative of Ukraine to the United Nations at the presentation of the draft GA resolution on Chornobyl

15 October 2010, 15:00-16:30, UN Conference Room 6

Distinguished delegates,

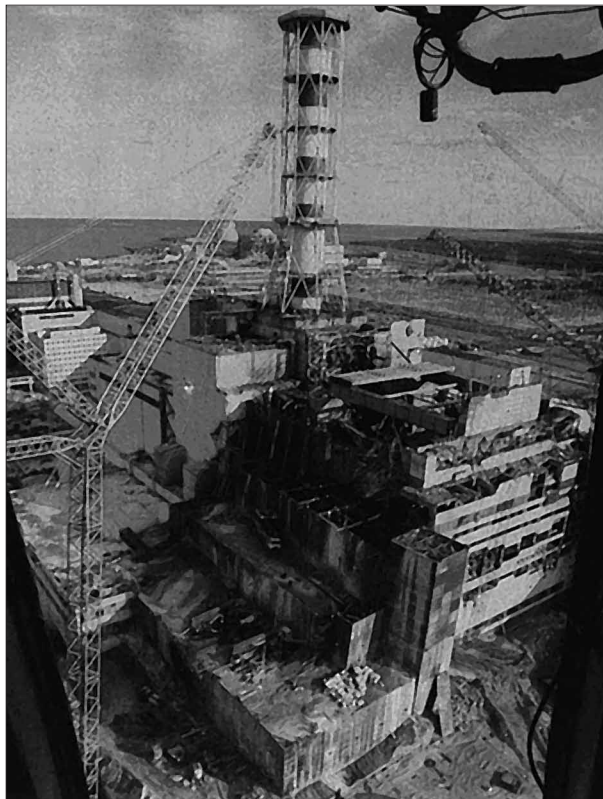
I would like to welcome you all to this presentation. It is my honour and privilege to introduce to you today in my capacity of coordinator in the UN in 2010 among the most affected by the Chornobyl catastrophe countries the draft resolution “Strengthening of international cooperation and coordination of efforts to study, mitigate and minimize the consequences of the Chornobyl disaster” under agenda item 69 (c).

Ukraine strongly believes that, given the scope and magnitude of the Chornobyl catastrophe and its severe long-standing consequences, Chornobyl issue should remain on the agenda of the GA sessions and be considered in the plenary.

This resolution when adopted will become a platform for further action to optimize international response to the aftermath of Chornobyl disaster. The document, which is based on the previous resolution and the Secretary-General’s report, takes stock of the progress made so far and seeks to further map out the plans for immediate assistance. It recognizes the importance of strengthened international Chornobyl cooperation.

The draft welcomes:

- efforts of international community to complete construction of the Shelter facility and transformation of it into an environmentally safe system;
- the realization of ongoing Chornobyl programmes and projects on the affected countries, in particular the ICRIN project
- the activities of one of the world’s top female tennis player, Maria Sharapova, as a Goodwill Ambassador for UNDP, with a special focus on Chornobyl issues;
- the realization of the UN Action Plan, elaborated by UNDP in accordance with the Chornobyl resolution



Chornobyl Nuclear Power Plant after blast, 1986

Source: http://antoine.frostburg.edu/phys/invention/case_studies/disasters/chernobyl.html

62/9, and aimed at the implementation of the “Decade of recovery and sustainable development of the affected regions” (2006-2016);

- an initiative of Ukraine, co-sponsored by Belarus and the Russian Federation, to convene the International Conference “25 Years after the Chornobyl Disaster: Safety for the Future” to be held in April 2011 in Kyiv, Ukraine;

- a special commemorative meeting of the General Assembly to be convened by the President of the General Assembly in April 26, 2011, in observance of the twenty-fifth anniversary of the Chornobyl catastrophe.

Our initial intention is to convene informal consultations on the draft resolution already next week. The time and venue will be announced in the

UN Journal. Of course we would prefer to come to the agreed text before 15 November (day of consideration at the Plenary agenda item 69, in particular the Chornobyl issue). We invite you to submit electronically your proposals or amendments to the draft directly to the experts of the Ukrainian mission for further distribution among all interested delegations.

Before passing the floor to my distinguished Colleagues from the Permanent Missions of the Republic of Belarus and the Russian Federation to the United Nations and UNDP Chornobyl Coordinator I would like to call upon the delegations to support and co-sponsor this draft resolution.

We believe that this year, like it was the case before, the document will be adopted by consensus.

Before concluding I would like once again to thank all of you for coming today. We count on our continuing cooperation in this regard as well as on co-sponsorship by your country of this draft resolution.

Thank you.

K. KOVSHEVYCH FOUNDATION

Since 1999 THE K.KOVSHCHYCH FOUNDATION, INC. (KKF) has been granting scholarships to gifted but economically deprived students in Ukraine and other parts of Eastern Europe, Asia and South America. The students are selected by the regional representatives of World Information Transfer and approved by the Board of Directors of the Foundation.

KKF supports future generations by enabling talented students enter into professional lives. Currently, students who have received KKF scholarships are studying in the following areas: medicine, diplomacy, history, education, agriculture and music.

In the photos are some of the students from the western regions of Ukraine, who are studying at Lviv universities. Scholarships have also been received by students studying in Kyiv, Kremenchuk, Berdyansk and other regions of Ukraine.

Dr. Christine Kovshevych Durbak, Founder and President of the K.Kovshevych Foundation is on the left side and center of the photos, together with the Regional Director of KKF in Ukraine, Professor Mykola Prytula.

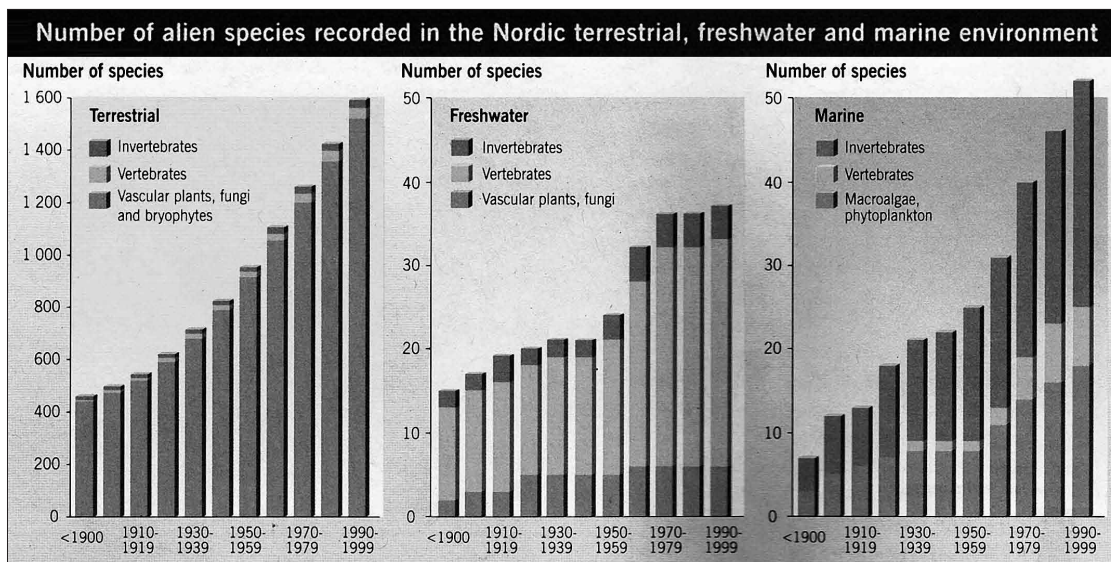


KKF scholarship recipients 2010 with prof. Mykola Prytula and Dr. Christine Kovshevych Durbak near Lviv University.



KKF scholarship recipients 2010 in a Lviv University classroom

Students wishing to receive a scholarship should submit a request for an interview at:
kkovshevychfoundation.net/scholarships



Source: Nordic/Baltic Network on Invasive Alien Species (NOBANIS)

Point of View, continuing from page 16

works through the stock. It can burrow into the mud when times are hard and lie without food for months, before exploding back into the ecosystem when conditions improve. It eats almost anything that moves.

Its terrestrial equivalent is the cane toad, widely introduced in the tropics to control crop pests. It's omnivorous and just about indestructible. Nothing which tries to eat it survives: it's as dangerous to predators as it is to prey. Unlike other amphibians, it can breed in salty water.

The world's most important seabird colony - Gough Island in the South Atlantic - is now being threatened by an unlikely predator: the common house mouse. After escaping from whaling boats 150 years ago, it quickly evolved to triple in size, and switched from eating plants to eating flesh. The seabirds there have no defenses against predation, so the mouse simply walks into their nests and starts eating the chicks alive. Among their prey are albatross fledglings, which weigh some 300 times as much as they do.

On Christmas Island the yellow crazy ant does something similar: it eats alive any animal it finds in its path.



Many species are uniquely adapted to very specific climatic conditions whereby small changes can mean that we lose these species forever. The golden toad has not been seen since 1989, and is believed to be extinct (UNEP-WCMC Species Sheet (Feb., 2002) www.unep-wcmc.org/species/f3ctsheets/toad/sheet.htm)

It is also wiping out the rainforest, by farming the scale insects which feed on tree-sap. Similar horror stories are unfolding almost everywhere. The species we introduce, unlike the pollution we produce, don't stop when we do. A single careless act - such as the introduction of the rabbit or the Lantana plant to Australia - can transform the ecology of a continent.

According to a report by the British government, invasive species cost this

country several billion pounds a year. The global damage they cause, it says, amounts to almost five percent of the world economy. A single introduced species - a speargrass called *Imperata* - keeps two million square kilometers in the tropics out of agricultural production, equivalent to the arable area of the United States, while ensuring that the native ecosystem can't regenerate.

In most cases there's a brief period in which an invasive species can be stopped, making it possible for governments to address the threat as soon as it appears. But a quick response is required for success. When museum weed (*Caulerpa taxifolia*) escaped into the Mediterranean from the Oceanographic Museum in Monaco, the authorities responded by bickering over whose fault it was. In 1984, when the invasion was first documented, the weed occupied one square meter of seabed. It could have been eradicated in half an hour. Now it has spread across 13,000 hectares and appears to be uncontrollable.

The mink, the walking catfish, the cane toad, the mutant house mouse, these are potent symbols of humanity's strangely lopsided power. When asked to repair the mess we've made, we proclaim our ignorance and propose a study group. Our challenge this century is to meet our capacity for harm with an equal power for good. Given the speed of our communication tools, governments and the private sector, including the non-profit portion, have the capacity to protect - not degrade - the world's ecosystems. But it takes regular reminders, that uninformed actions have unintended consequences.

Source: monbiot.com/archives/2010/10/04/the-aliens-are-coming/; "Biodiversity and Climate Change" published by The Secretariat of the Convention on Biological Diversity, UNEP. www.biodiv.org 2007; Biodiversity, Commission for Environmental Cooperation, 393 rue St. Jacques Ouest, Bureau 200, Montreal, Canada H2Y 1N9, info@ccemtl.org, cec.org; "Invasive Alien Species: a threat to biodiversity" published by The Secretariat of the Convention on Biological Diversity, UNEP. www.cbd.int 2009; Global Biodiversity Outlook 2, published by The Secretariat of the Convention on Biological Diversity, UNEP. biodiv.org/GB02.

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*"We have not inherited
the world from our
forefathers...we have
borrowed it from our
children."*

KASHMIRI PROVERB

World Information Transfer
Mission Statement

World Information Transfer, Inc., (WIT) is a not-for-profit, non-governmental organization in General Consultative Status with the United Nations, promoting environmental health and literacy. In 1987, inspired by the Chernobyl nuclear tragedy, WIT was formed in recognition of the pressing need to provide accurate actionable information about our deteriorating global environment and its effect on human health. WIT exercises its mandate through:

- **World Ecology Report (WER).** Published since 1989, the World Ecology Report is a quarterly digest of critical issues in health and environment, produced in four languages and distributed to thousands of citizens throughout the developing and developed world.
- **Health and Environment: Global Partners for Global Solutions Conference.** Since 1992, WIT has convened what we believe to be one of the world's premier forums for the presentation of scientific papers by international experts on the growing clinical evidence supporting the link between degrading environments and diminished human health. The conference has been convened as a parallel event to the annual meeting of the UN Commission on Sustainable Development. The scientific papers presented at the conference are available on WIT's web site.
- **Health and Development CD ROM Library.** This project consists of a library of CDs each of which focuses on a subject within the overall topic of Development and Health information. Our Human Information CD ROM Library offers one bridge across the "digital divide" for both developed and developing countries. The project is continuous with future topics being developed.
- **Health and Development CD ROM Library for Ukraine.** In conjunction with UNDP, WIT has developed a country specific library disc for distribution in schools and centers in Ukraine.
- **Humanitarian Aid.** In conjunction with the K.Kovshevych Foundation, WIT provides humanitarian aid to schools, hospitals and orphanages in areas devastated by environmental degradation. Shipments include computers, clothing, toys and medical equipment.
- **Internship.** World Information Transfer (WIT) offers internships in New York City, where our main office is located. Our goal is to encourage future leaders in health and environment. Our interns spend the majority of their time at the United Nations.
- **Scholarship Program.** With the support of the K. Kovshevych Foundation, WIT offers scholarships to intellectually gifted university students in need of financial assistance to continue their studies in areas related to health and environment.
- **www.worldinfo.org** WIT provides through its web site up to date science based information on the relationship between human health and the natural environment, including the papers from the WIT's annual conference, the archived World Ecology Reports, and our new Ecology Enquirer, an e-newsletter written by our Interns targeted to young people.
- **Centers for Health & Environment.** The aim of the Centers is to promote research, education and solutions. The first center was opened in Ukraine in 1992.

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World Information Transfer

World Ecology Report

Winter 2010

15

Point of View: THE ALIENS ARE COMING

There is growing evidence that we are beginning to alter, for the first time in history, the chemistry, physics and physiology of our planet. A basic understanding of biological systems and their dependence on the environment is indicative of the potential problems and disasters these changes pose for all living things. While focusing on human health dimensions, we need to recognize how environmental degradation leads to biodiversity loss and how that affects the future for humans. The ways that global ecosystems support human health and make human life possible is slowly being altered. This is the situation we are facing with global environmental degradation, particularly the destruction of habitat by human activity and the extinction of diversity of life.

A group of animal rights activists in Donegal, Ireland, made a special contribution to the International Year of Biodiversity. They cut their way into a fur farm and released 5,000 mink. The mink will remain at large for years, perhaps millennia. Like many introduced species, American mink can slash their way through the ecosystem, as they have no native predators, and their prey species haven't evolved to avoid them.

What were American mink doing on an Irish fur farm anyway? While the United Kingdom banned fur-farming



*A pair of dingos in Northern Territory, Australia.
Photograph: Arco Images/Alamy*

in 2000, Irish governments have resisted prohibition, to protect a tiny but wildly destructive industry. The republic's five remaining fur farms are the sole source of continuing releases of mink, either through raids or accidents. They are also places of astonishing cruelty, in which intelligent carnivores are confined to cages the size of a few shoeboxes. The Irish government is considering phasing out fur farming in

2012. Until then, its citizens will continue to pay more to eradicate mink than they make from breeding them.

But Ireland is a small player. Two-thirds of the world's mink farming and 70% of its fox farming takes place in other EU countries. Denmark alone produces 40% of the global supply of mink pelts. Feral American mink on the Continent are even more damaging than they are in the UK as they drive out the endangered European mink.

In October, governments met at Nagoya, in Japan, to review the Convention on Biological Diversity. Perhaps the starkest problem has been their inability – or unwillingness – to control the spread of invasive species.

For example, the walking catfish, is now colonizing China, Thailand and the United States, after escaping from fish farms and ornamental ponds. It can move across land at night, reaching water that no other fish species has colonized. It slips into fish farms and quietly

Continuing on page 14



HOW YOU CAN HELP:

WIT is a non-profit, international, non-governmental organization, in consultative status with the United Nations, dedicated to forging understanding of the relationship between health and environment among opinion leaders and concerned citizens around the world. You can help us with your letters, your time, and/or your donations.

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*"Never doubt that a small group
of thoughtful committed citizens
can change the world. Indeed
it's the only thing that ever has"*
MARGARET MEAD

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